

# **EXHIBIT 1**

# Influence of Air on Heat Degradation

## Specimen

### **EVOH**

(Ethylene content:29 mol%,  
Saponified degree:99.7 mol%,  
MFR[210 °C 2160g]:3.4g/10 min)

## Heating Condition

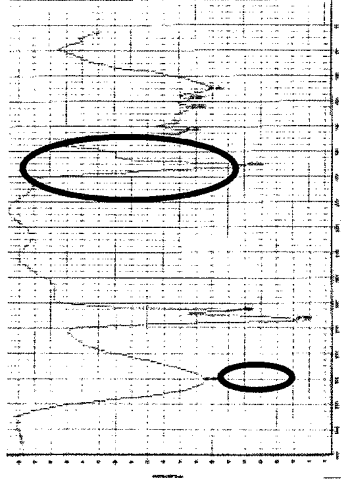
**Atmosphere : N<sub>2</sub> , Air**

**Temperature : 220, 240 °C**

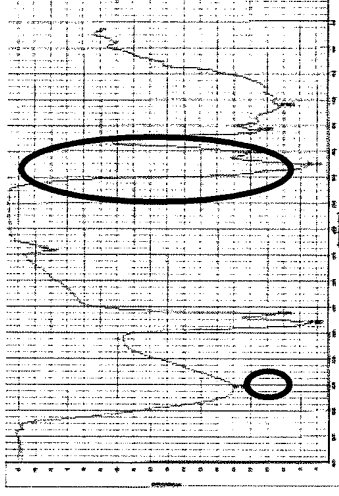
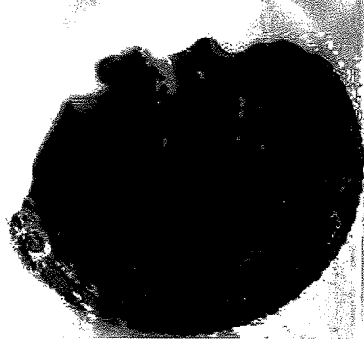
**Period : Specified Hours**

# Influence of Air on Heat Degradation

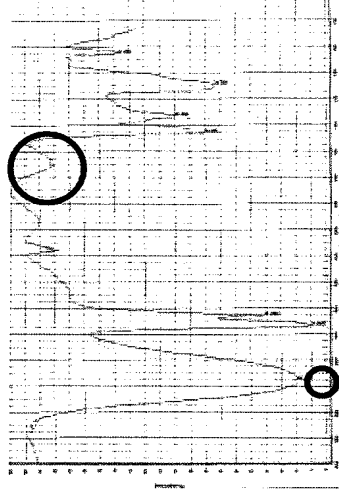
Increasing IR Peak with  $1710\text{ cm}^{-1}$  : Carbonyl Group  
Decreasing IR Peak with  $3300\text{ cm}^{-1}$  : Hydroxyl Group



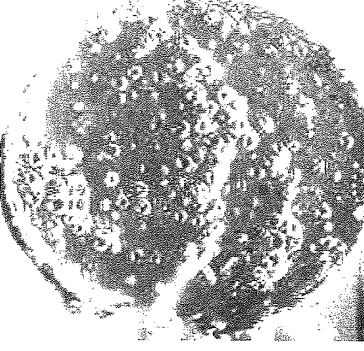
230 C / Air / 1hr



230 C / Air / 4hrs



230 C /  $\text{N}_2$  / 4hrs



**With heat and direct exposure to air, EVOH is easier to degrade.**

# Comparing EVOH vs Other Resins

Condition :

200 °C in Air

1hr

3hrs

5hrs

7hrs

EVOH(Ethylene 32 mol%)

PP(NOVATEC EA9)

Adhesive resin (ADMER QF551)

With heat and direct exposure to air, EVOH is very easier  
to degrade than other resins.